# USER MANUAL

Longo programmable controller
LPC-2.DO8 module

**Version 8**

*SMARTEH d.o.o. / Trg tigrovcev 1 / 5220 Tolmin / Slovenia / Tel.: +386(0) 388 44 00 / e-mail: info@smarteh.si / www.smarteh.si*

Written by SMARTEH d.o.o.
Copyright © 2012, SMARTEH d.o.o.

User Manual

Document Version: 008
July 1, 2012

STANDARDS AND PROVISIONS: Standards, recommendations, regulations and provisions of the country in which the devices will operate, must be considered while planning and setting up electrical devices. Work on 230 VAC network is allowed for authorized personnel only.
DANGER WARNINGS: Devices or modules must be protected from moisture, dirt and damage during transport, storing and operation.
WARRANTY CONDITIONS: For all modules LONGO LPC-2 – if no modifications are performed upon and are correctly connected by authorized personnel – in consideration of maximum allowed connecting power, we offer warranty for 24 months from date of sale to end buyer. In case of claims within warranty time, which are based on material malfunctions the producer offers free replacement. The method of return of malfunctioned module, together with description, can be arranged with our authorized representative. Warranty does not include damage due to transport or because of unconsidered corresponding regulations of the country, where the module is installed.
This device must be connected properly by the provided connection scheme in this manual. Misconnections may result in device damage, fire or personal injury.
Hazardous voltage in the device can cause electric shock and may result in personal injury or death.
NEVER SERVICE THIS PRODUCT YOURSELF!
This device must not be installed in the systems critical for life (e.g. medical devices, aircrafts, etc.).
If the device is used in a manner not specified by the manufacturer, the degree of protection provided by the equipment may be impaired.

Waste electrical and electronic equipment (WEEE) must be collected separately!

LONGO LPC-2 complies to the following standards:
- EMC:EN 61000-6-2 (EN 50082), EN 61000-6-4 (EN 50081)
- LVD: IEC 61131-2
- Vibrations and climatic-mechanical: EN 60068-2-6, EN 60068-2-27, EN 60068-2-29

Smarteh d.o.o. operates a policy of continuous development. Therefore we reserve the right to make changes and improvements to any of the products described in this manual without any prior notice.

MANUFACTURER:
SMARTEH d.o.o.
Trg tigrovcev 1
5220 Tolmin
Slovenia

# Index

## Longo programmable controller LPC-2.DO8 module

1 DESCRIPTION.....1

2 FEATURES.....2

3 INSTALLATION.....3

3.1 Connection scheme.....3
3.2 Mounting instructions.....5
3.3 Module labeling.....7

4 TECHNICAL SPECIFICATIONS.....8

5 CHANGES.....9

6 NOTES.....10

# 1 DESCRIPTION

LPC-2.DO8 is an eight relay digital output module with break contacts (NC). It can be used in a wide range of applications, but is not suitable to be use with heavy inductive loads (reflectors, contractors, motors etc...).

While using inductive loads it is recommended to use standard suppression circuits or in worse cases use another type of digital output (e.g. triac module like LPC-2.DO9).

LEDs indicate each relay's contacts state. If a LED is on, the module's connection pins for the correspondent relay are opened (refer to the Table 5).

Module is powered from internal BUS.

NOTE: For proper system configuration and data allocation please refer to LPC Composer software help menu.

# 2 FEATURES

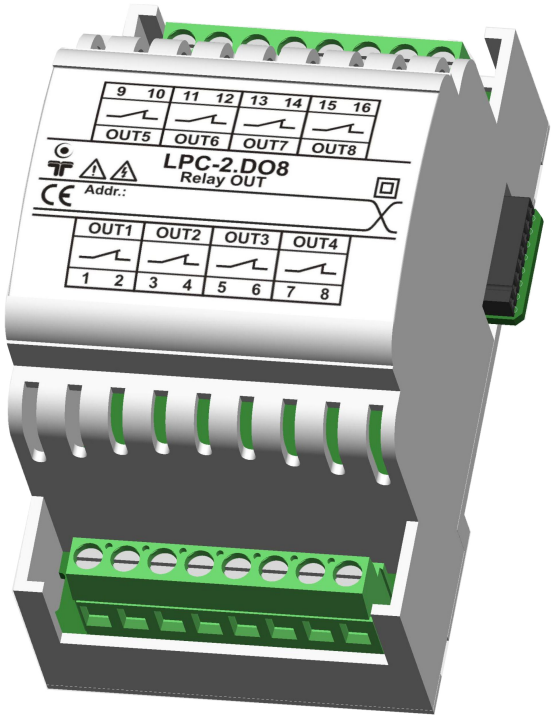



Figure 1: LPC-2.DO8 module

| Table 1: Technical data |
|---|
| Eight relay digital output with break contacts (NC) |
| Flexible output for wide use of operation |
| Standard DIN EN50022-35 rail mounting |

# 3 INSTALLATION

## 3.1 Connection scheme

**Figure 2: Connection scheme**

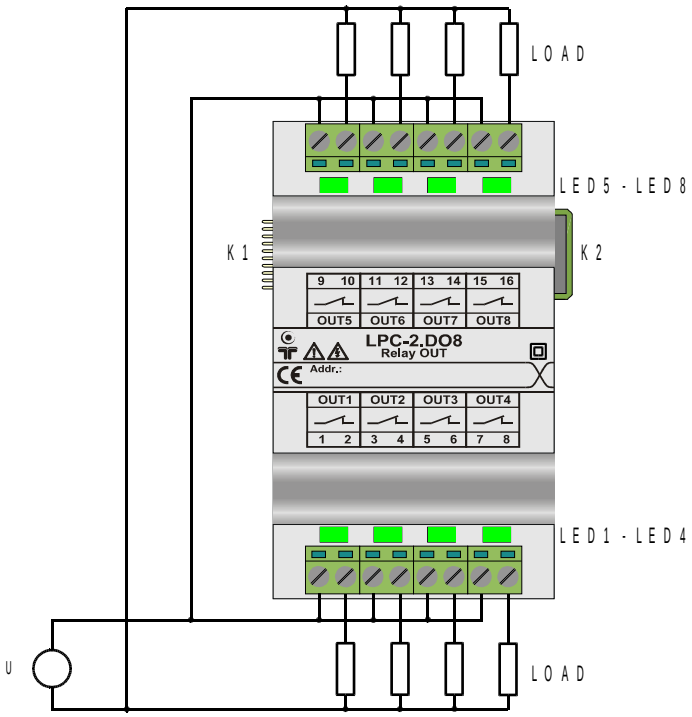



**Table 2: OUT[1]**

| | | |
|---|---|---|
| OUT1.1<br>OUT1.2 | Voltage free contacts | Break contacts (NC) |
| OUT2.3<br>OUT2.4 | Voltage free contacts | Break contacts (NC) |
| OUT3.5<br>OUT3.6 | Voltage free contacts | Break contacts (NC) |
| OUT4.7<br>OUT4.8 | Voltage free contacts | Break contacts (NC) |
| OUT5.9<br>OUT5.10 | Voltage free contacts | Break contacts (NC) |
| OUT6.11<br>OUT6.12 | Voltage free contacts | Break contacts (NC) |
| OUT7.13 | Voltage free contacts | Break contacts (NC) |

1 Wires connected to the module must have cross sectional area at least 0.75 $mm^2$. Minimum temperature rating of wire insulation must be 85 °C.

| Table 2: OUT | | |
|---|---|---|
| OUT7.14 | | |
| OUT8.15<br>OUT8.16 | Voltage free contacts | Break contacts (NC) |

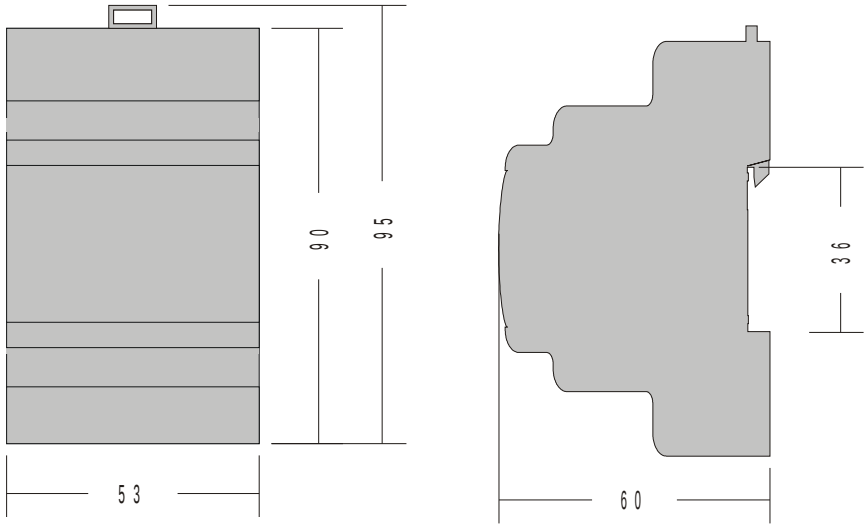
| Table 3: K1 | | |
|---|---|---|
| Internal BUS | Data & DC power supply | Connection to I/O module |

| Table 4: K2 | | |
|---|---|---|
| Internal BUS | Data & DC power supply | Connection to I/O module |

| Table 5: LED1 – LED8 | | |
|---|---|---|
| Status | Digital output state | On: Output voltage present between OUT1.1 to OUT1.2 up to Output voltage present between OUT8.15 to OUT8.16<br>Off: Output voltage not present between OUT1.1 to OUT1.2 up to Output voltage not present between OUT8.15 to OUT8.16 |

## 3.2 Mounting instructions

**Figure 3: Housing dimensions**




- Dimensions in millimeters.

EXTERNAL SWITCH OR CIRCUIT-BREAKER AND EXTERNAL OVERCURRENT PROTECTION: The unit is allowed to be connected to installation with over current protection that has nominal value of 16 A or less.

RECOMMENDATION ON SWITCH OR CIRCUIT-BREAKER PROTECTION: There should be two poles main switch in the installation in order to switch off the unit. The switch should meet the requirements of standard IEC60947 and have a nominal value at least 6 A. The switch or circuit-breaker should be within easy reach of the operator. It should be marked as the disconnecting device for the equipment.

All connections, module attachments and assembling must be done while module is not connected to the main power supply.

***Mounting instructions:***

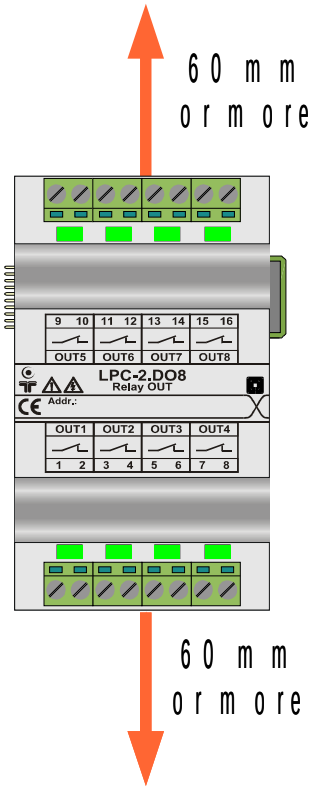
1. Switch OFF main power supply.
2. Mount LPC-2.DO8 module to the provided place inside an electrical panel (DIN EN50022-35 rail mounting).
3. Mount other LPC-2 modules (if required). Mount each module to the DIN rail first, then attach modules together through K1 and K2 connectors.
4. Connect digital output wires according to the connection scheme in Figure 2.
5. Switch ON main power supply.

Dismount in reverse order. For mounting/dismounting modules to/from DIN rail a free space of at least one module must be left on the DIN rail.

Outputs OUT1..OUT4 on the lower side of module form one group and outputs on the upper side, OUT5..OUT8, forms the other. Outputs in the same group are basic insulated while outputs from one group to another are double/reinforced insulated.

Mains voltage 230 V and  48 V SELV must not be connected in the same group of outputs. It is possible to connect mains voltage in one group and SELV in the other group.

## Figure 4: Minimum clearances

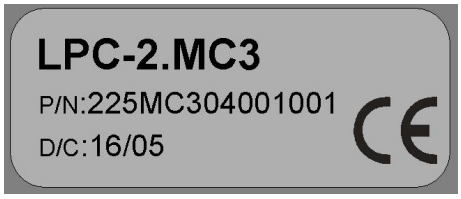



The clearances above must be considered before module mounting.

## 3.3 Module labeling

**Figure 5: Labels on housing**

Label 1 (MC3 sample):




Label 2 (MC3 sample):

***Label 1 description:***

1. **LPC-2.MC3** is the full product name.
2. **P/N:225MC3040001001** is the part number.
   - **225** – general code for product family,
   - **MC3** – short product name,
   - **04001** – sequence code,
     - 04 – year of code opening
     - 001 – derivation code
   - **001** – version code (reserved for future HW and/or SW firmware upgrades).
3. **D/C:16/05** is the date code.
   - **16** – week and
   - **05** – year of production.

***Label 2 description:***

1. **S/N:MC3-S9-0500000190** is the serial number.
   - **MC3** – short product name,
   - **S9** – user code (test procedure, e.g. Smarteh person xxx),
   - **0500000190** – year and current stack code,
     - 05 – year (last two cyphers)
     - 00000190 – current stack number; previous module would have the stack number 00000189 and the next one 00000191.

# 4 TECHNICAL SPECIFICATIONS

| Table 6: Technical specifications | |
|---|---|
| Power supply | from internal BUS |
| Power consumption | 2.75 W |
| Output | 8 relay break contacts (NC), non-protected |
| Max. switching power per channel[2] (resistive load) | AC: 230 V, 3 A |
| | DC: 48 V, 1 A<br>30 V, 3 A |
| Min. permitted load per channel | 100 mA at 5 VDC |
| Connection type | screw type connector for stranded wire 0.75 to 2.5 $mm^2$ |
| Dimensions (L x W x H) | 90 x 53 x 60 mm |
| Weight | 140 g |
| Ambient temperature | 0 to 50 °C |
| Ambient humidity | max. 95 %, no condensation |
| Maximum altitude | 2000 m |
| Mounting position | vertical |
| Transport and storage temperature | -20 to 60 °C |
| Pollution degree | 2 |
| Overvoltage category | II |
| Electrical equipment | Class II (double insulation) |
| Protection class | IP 30 |

* NOTE: Inductive loads are influencing the relay contacts by shortening their working life period. It is recommended to use standard suppression circuits or in worse cases use another type of digital output (e.g. triac).

2 This specification is valid only for products with serial number greater than 53. For products with lower serial No. specification are: AC: 230V, 0.5A; DC 30V 1A

# 5 CHANGES

The following table describes all the changes to the document.

| Date | V. | Description |
|---|---|---|
| 1.7.2012 | 008 | CGP General update and technical data update. |
| 11.5.2010 | 007 | Updated warranty permanence. |
| 19.12.2009 | 006 | Changed specification for the max. switching capability |
| 23.2.2006 | 004 | - Added output isolation description<br>- Added output protection type description<br>- Pollution degree changed to 2 |
| 30.6.2005 | 003 | The basic version, issued as *LPC-2.DO8 module UserManual*. |

# 6 NOTES